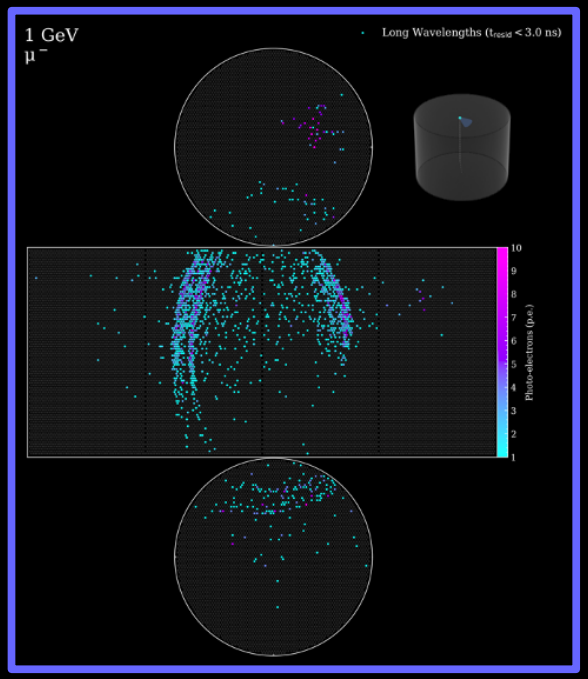
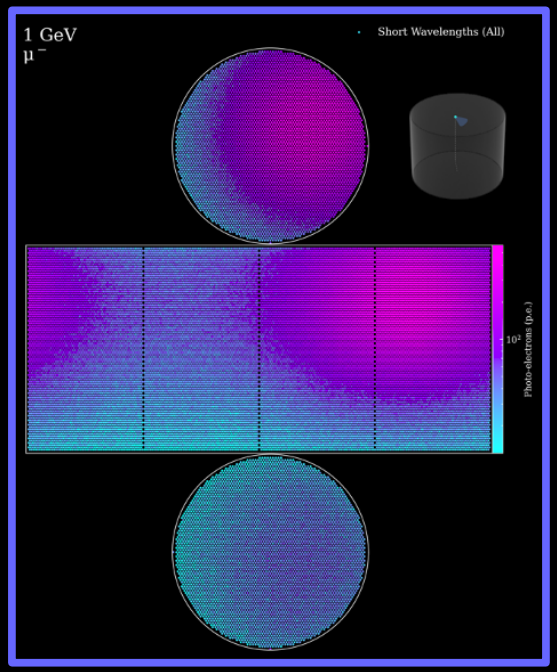
THEIA





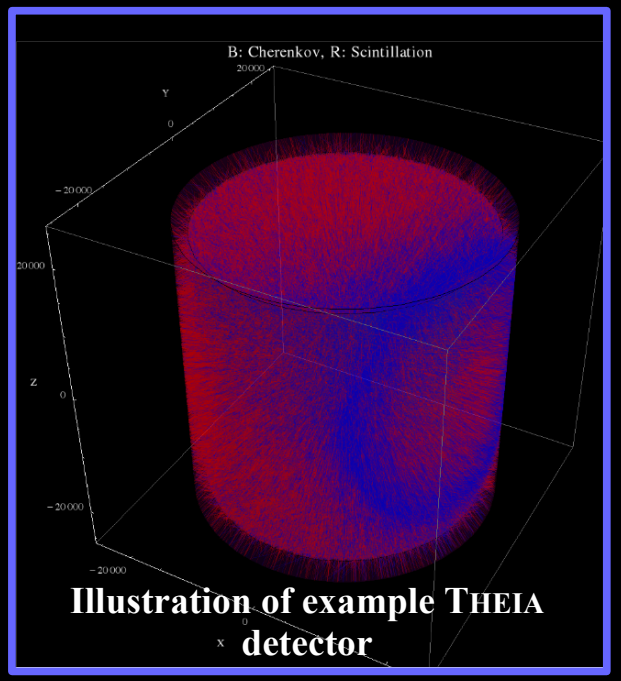
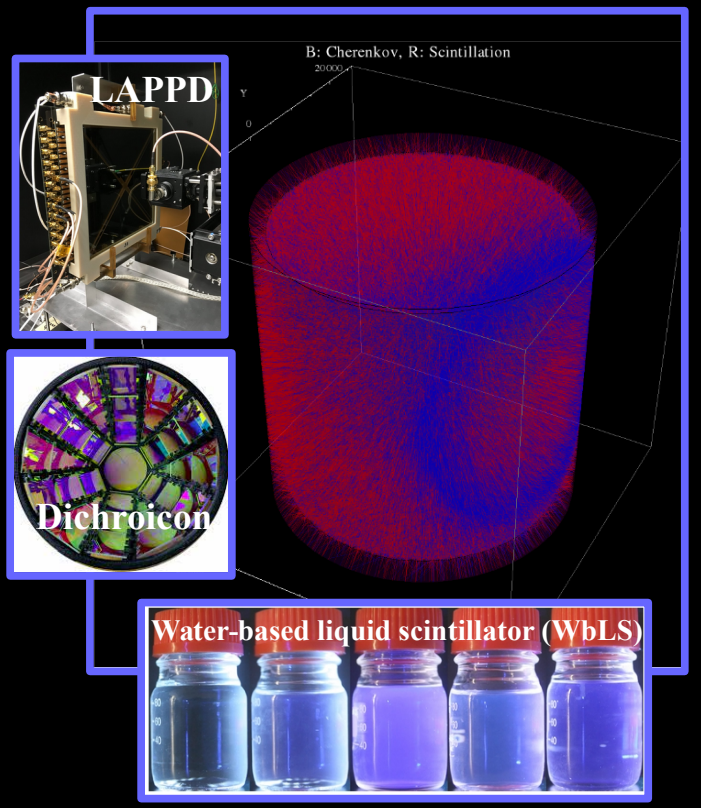


Illustration of example THEIA detector

THEIA is a large, hybrid optical neutrino detector with the ability to separate Cherenkov and scintillation light.

THEIA



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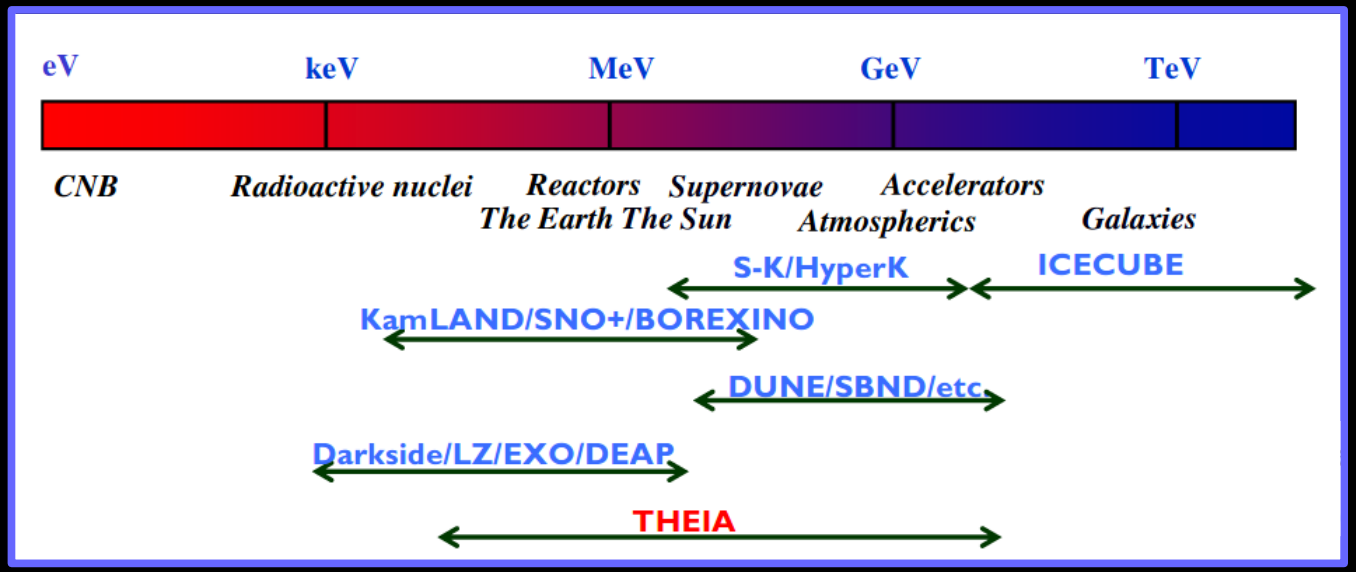
Many possible technology choices, such as fast-timing photosensors, the dichroicon, and/or WbLS.

THEIA



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THEIA unlocks an extremely broad neutrino physics program.

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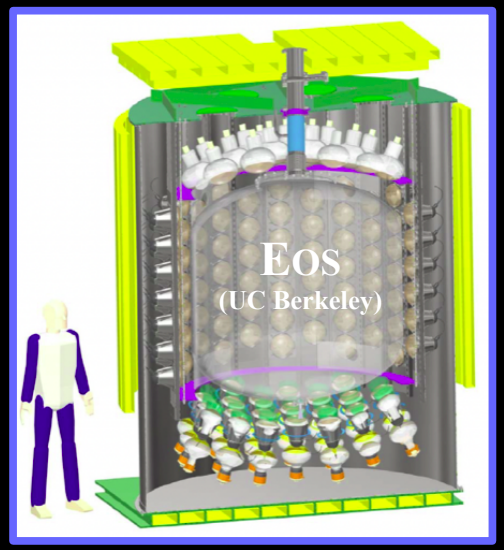

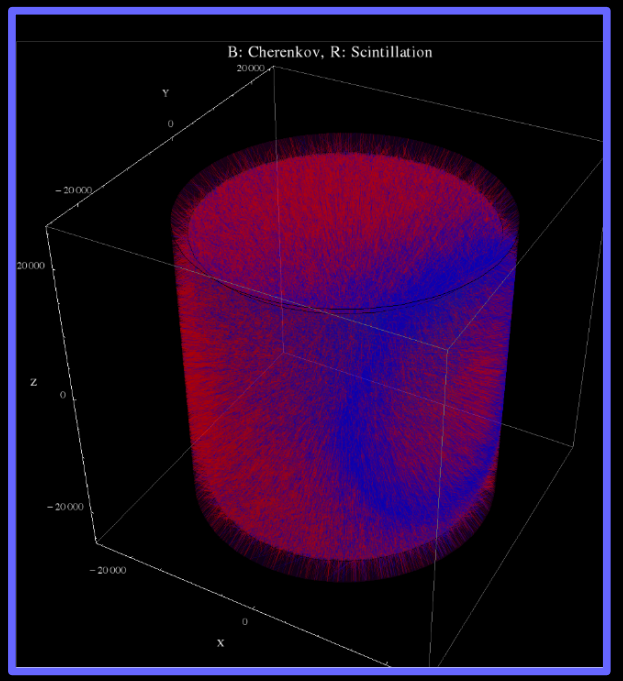

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Technology demonstrators (Eos, ANNIE, BNL demonstrator) are underway.

THEIA

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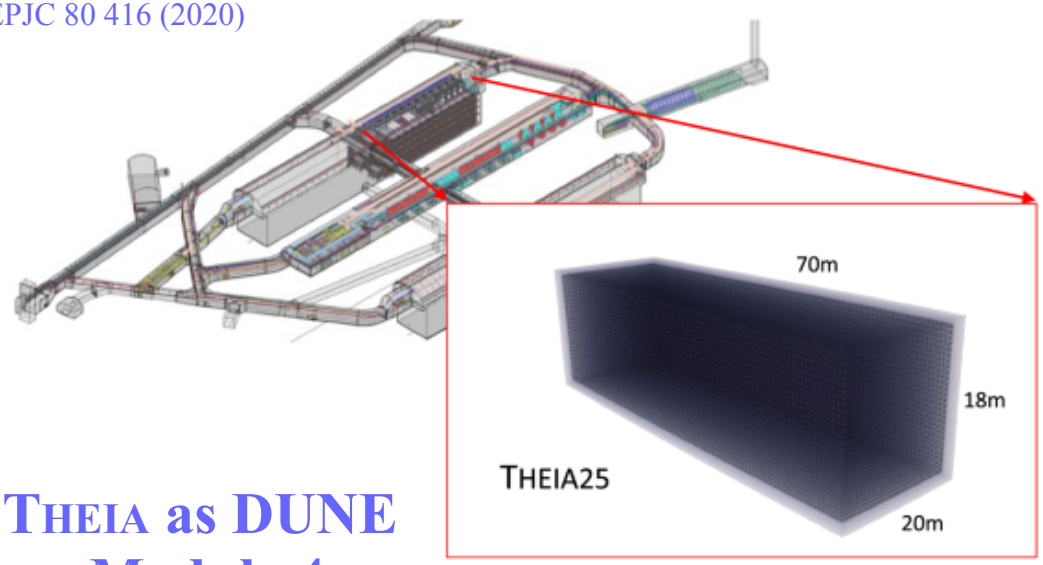

THEIA as DUNE Module 4

THEIA is ideally located at SURF as DUNE module 4

THEIA

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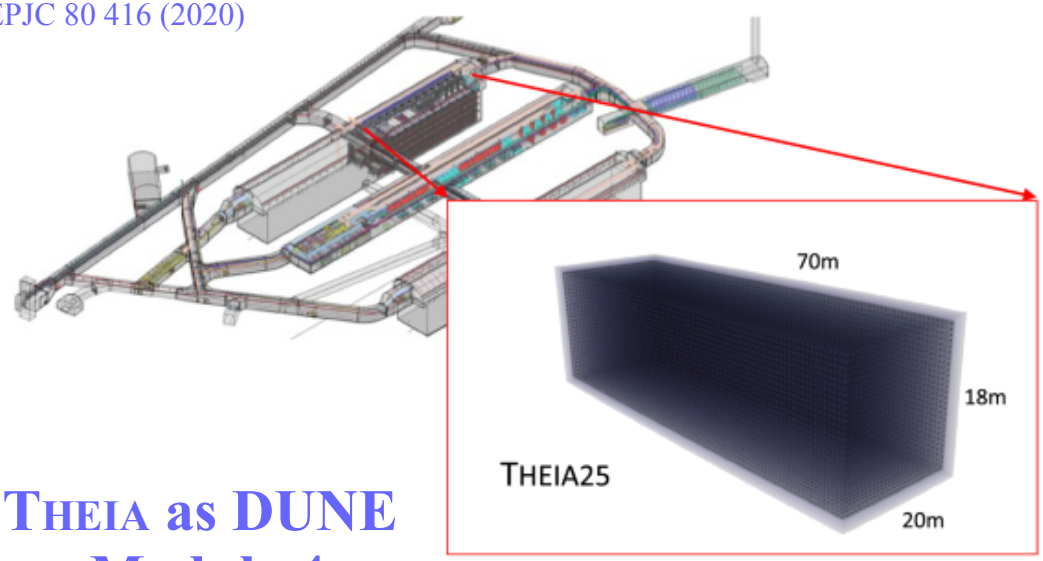

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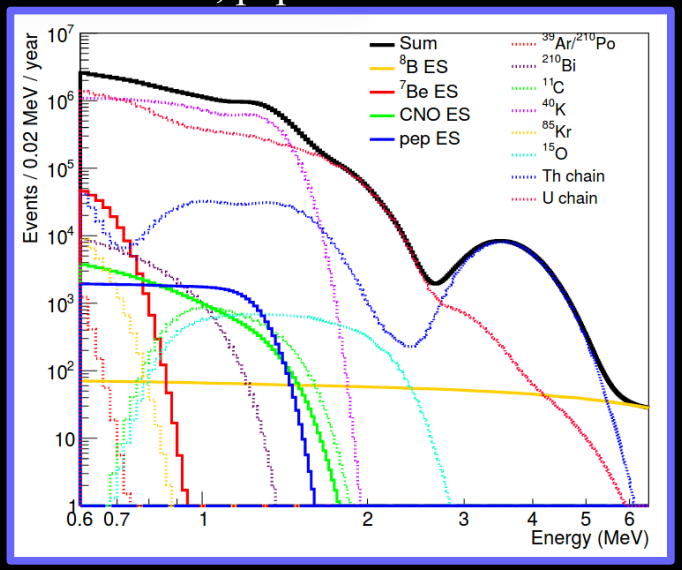
– Low-energy solar neutrino spectroscopy, in an energy regime inaccessible to DUNE Ph. I

CNO, pep and MSW ^{8}B



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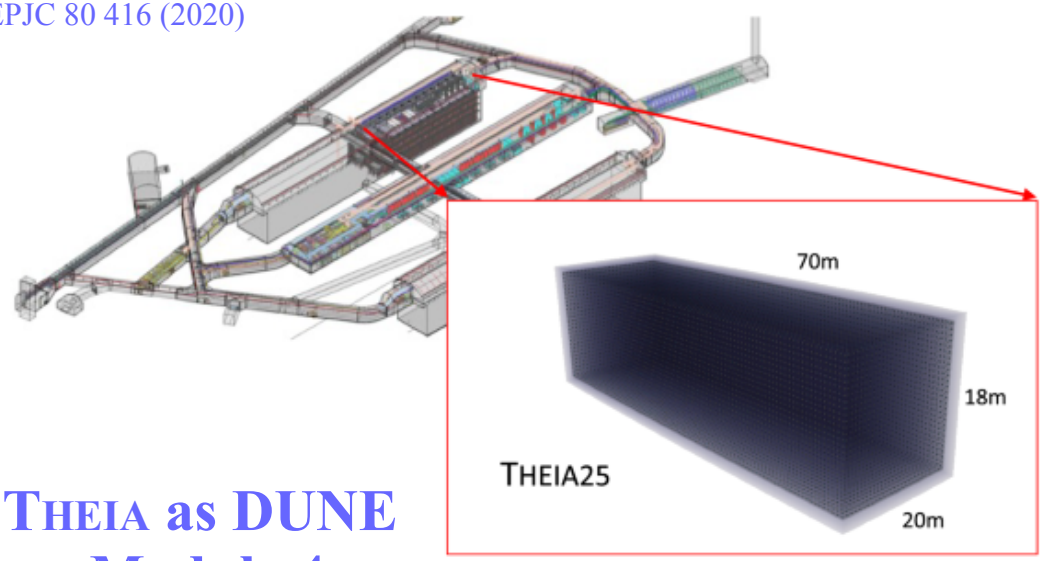

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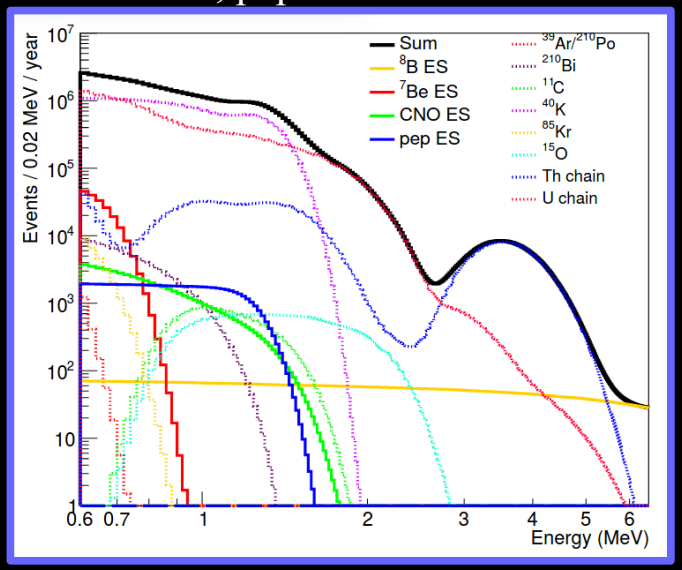
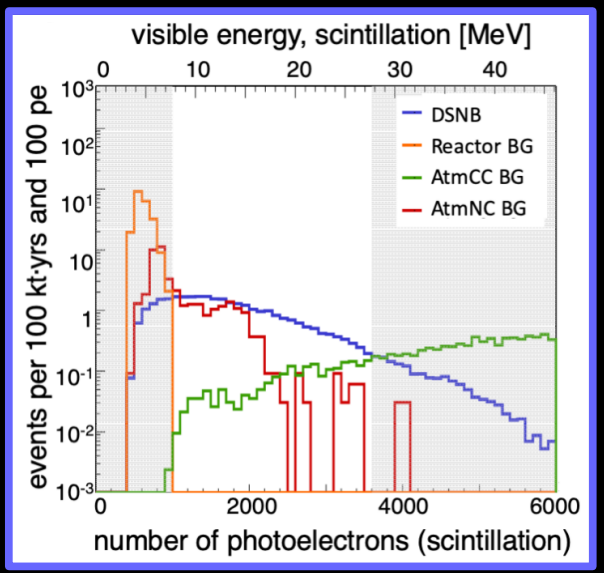


DSNB



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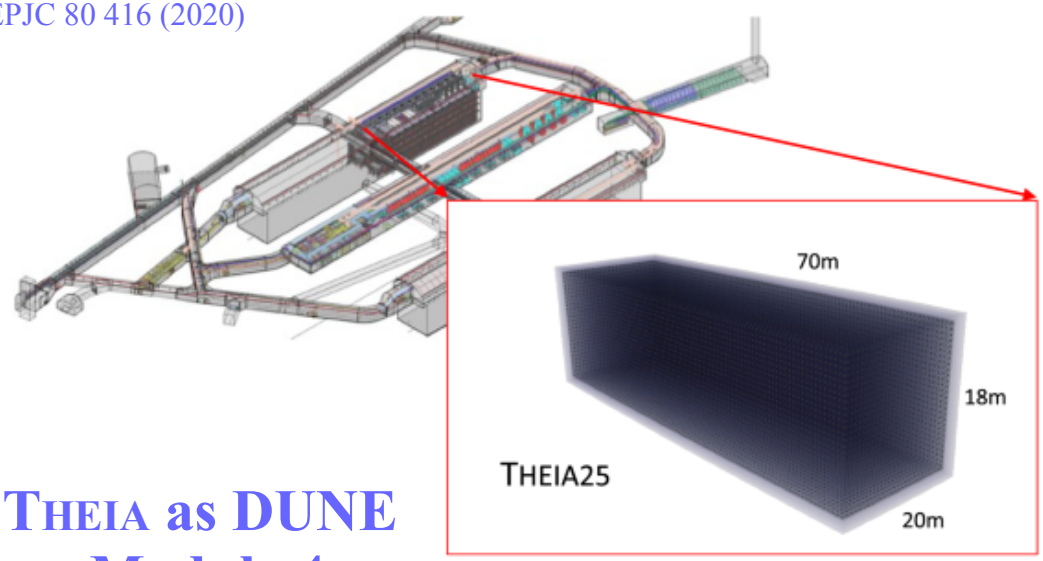

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– Geoneutrinos, nucleon decay, and more

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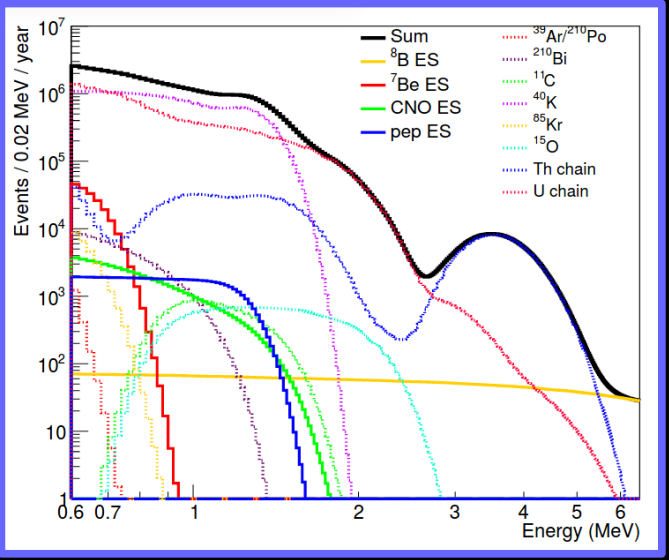
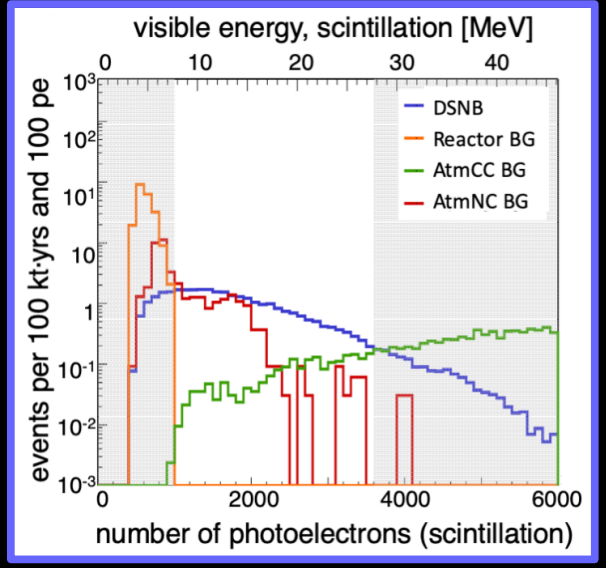
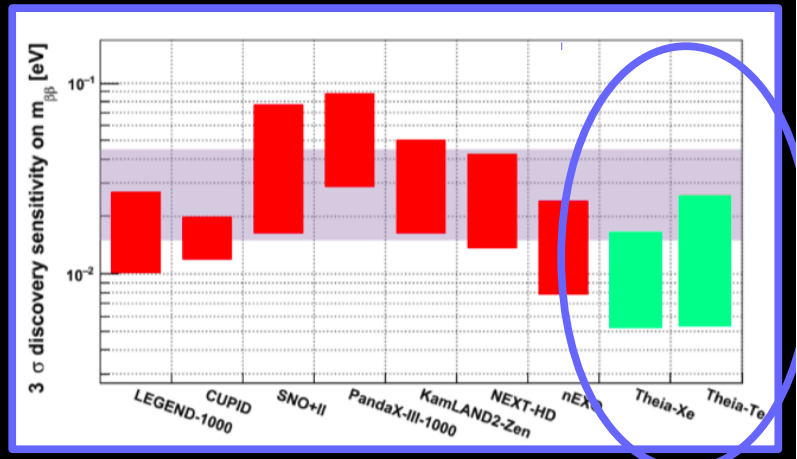


DSNB



0νββ



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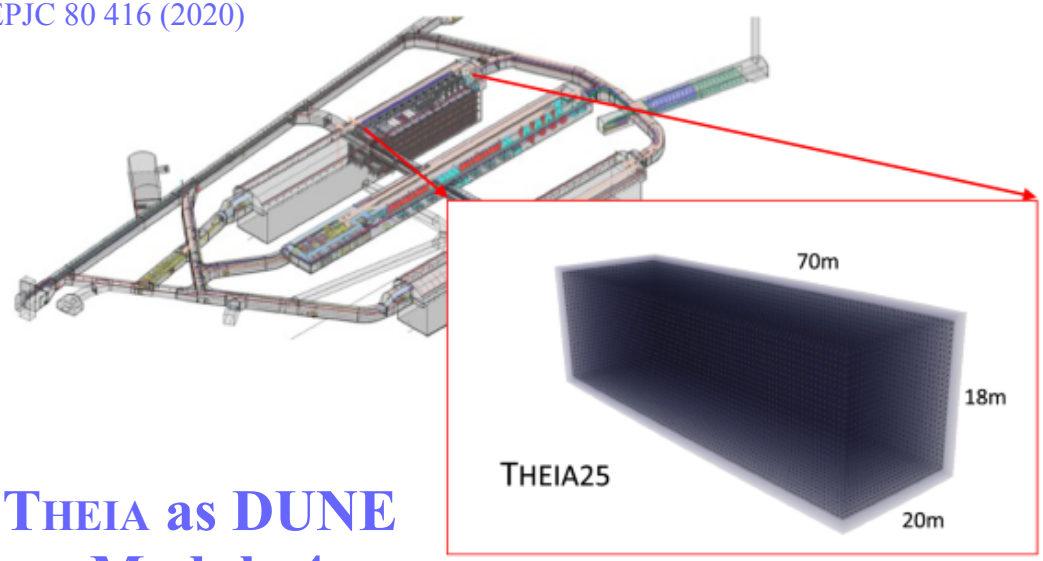

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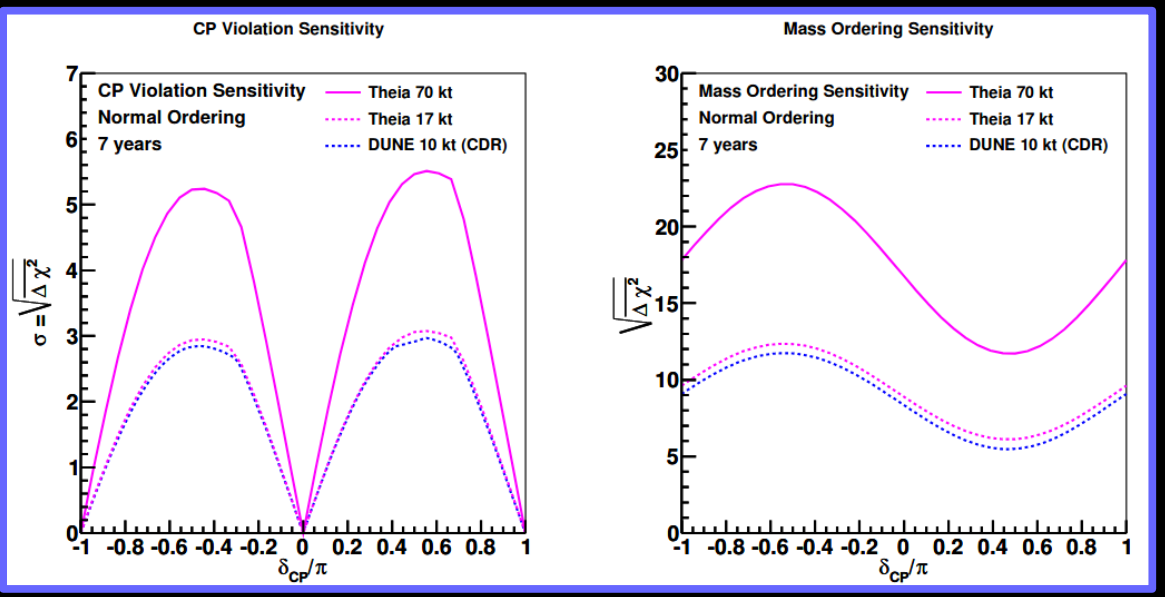

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THEIA provides counterpart to DUNE LAr module with similar sensitivity to δ_{cp} and the mass ordering using a low-z target material.

This allows a direct comparison to HyperK in the scenario where DUNE and HyperK disagree on the measured value of δ_{cp}.